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Our Chemical Environment

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The following is a transcription of the Third Quarter 1973 issue of Dr. Royal Lee's *Applied Trophology* newsletter, originally published by Standard Process Laboratories.

Our Chemical Environment

A Body Insult

Apparently, the effects of chemicals on man can only be determined by examining the total environment to which a man is exposed. At a symposium there years ago, Dr. Alec B. Morrison, Deputy Director-General of the Canadian Food and Drug Directorate, stated:

> "We cannot afford to treat problems which arise from chemicals in foods as something distinct and uniquely different from those which arise from chemicals in drugs, air, soil or water. The human body doesn't differentiate between sources of environmental insults; it is the total impact on man that is the important concern."

This fact is generally ignored in farming, forestry, and medicine, as our concerned government agencies and the chemical and drug producing industries have usually only considered the effects of their specific product as a separate contaminant or pollutant of air and water, instead of in toto. However, it is daily becoming more apparent that the health of our nation is in jeopardy because of this shortsighted policy.

We believe this fact was ably demonstrated in the International Life Expectancy Chart printed in the last issue of *Applied Trophology*. From this chart we reasoned that our general physical condition and level of health is below that of many less affluent countries, in spite of the fact that we are presumed to be better fed and have A1 health care. So many of our citizens, especially the younger element, are overfed but undernourished.

Much of the blame for the continuing health decline is said to be the general apathy of the medical profession. Dr. Jean Mayer, President Nixon's nutrition advisor, has stated that "the average physician knows less about nutrition than his secretary."

Many individual doctors are convinced of the benefits of good nutrition but must slavishly adhere to the prescribed expression, "We are all so well fed in this country that it is only in very rare circumstances that food supplements may be necessary for good health." Or the skeptical answer to any query on vitamins, "Take them if you desire, they probably won't do any harm."

No doubt these mouthings are distasteful to some very dedicated doctors; however, they dare not take chances on losing their hospital privileges. It is for this reason, no doubt, that preventive dentistry seems to be forging ahead of preventive medicine as dentists generally are not subject to this hazard.

Many physicians have been waiting, for years, for the subject of nutrition to be incorporated into the medical school curriculum so they could take a postgraduate course, as patient demand for better nutritional knowledge is very evident. They received some encouragement in 1962 when, at the Chicopee Conference, in Chicopee Falls, Massachusetts, a program to teach nutrition in medical schools was outlined for further study. This conference was sponsored by the Council on Foods and Nutrition of the AMA.

Last year another meeting was held at Williamsburg, Virginia. It was titled "Conference on Guidelines for Nutrition Education in Medical Schools and Postdoctoral Training Programs." This meeting also was sponsored by the AMA Council on Foods and Nutrition and supported by the American Heart Association, the Center for Disease Control in Atlanta, Georgia, and the Nutrition Foundation, Inc.

Membership in the latter organization includes food manufacturers, processors, and distributors of the foods for supermarkets. Apparently, from a monetary viewpoint the members of this foundation would like to keep the status quo. The report by Charles E. Butterworth Jr., MD, from Birmingham, Alabama, vice chairman of the AMA Council on Foods and Nutrition, stated that in the last ten years little progress had been made. He said: "Medical education and medical practice have not kept abreast of the tremendous advances in nutrition."

The Consumer Federation of America agrees with this statement as they feel that doctors, nurses, research workers, and parents have been convinced that our basic nutritional problem has been "nutritional illiteracy." This seems to bear out the anonymous statement, "Well organized ignorance often passes, unfortunately, for wisdom."

Unfortunate Advertising

Since World War II misleading food advertising has tended to promote such ignorance. Advertising tends to shift consumption, all too often, from better foods to less nutritional foods. From *Advertising Age*, August 1972, we learn that one company spent $160 million on advertising. Soft drink manufacturers are said to spend approximately $200 million per year.

In this regard, Dr. Jean Mayer testified before the Senate Committee on Nutrition and Human Needs that "the promotion of high sugar cereals (some of which contain over 50% sugar), snacks, and soft drinks to children is a dental disaster and may be a factor in increasing the likelihood of diabetes in genetically vulnerable subjects; for the past two years consumption of sugar and corn syrup has exceeded our flour consumption, with unpredictable results for the health of the country."

Mothers advise that these sweetened cereals are often eaten like candy, without milk. Dr. Mayer further suggested that because of this inadequate nutrition, trace mineral deficiencies, particularly a zinc deficiency, may be appearing in U.S. children. Principally due to Saturday morning TV ads that appeal to children, including middle- and upper-economic-class children, the sale of non-nutrient food products was over $13 billion dollars in one year. As the consumption of refined foods, especially sweets and soft drinks, has increased a corresponding drop in the consumption of fresh vegetables, fruits, butter, eggs, whole cereals (hot), good bread, and potatoes has occurred.

It is a fact that from 1960 to 1964, or in only four years, the consumption of soft drinks increased 21 percent, candy 17 percent, white flour baked goods, macaroni, and packaged cereals 16 percent each. We are quite sure the percentage increase in the last five years is much greater. It is very apparent that these empty food products are cheating the bodies of our children of the necessary essential food nutrients.

Brain Chemistry Involvement

Only recently Dr. Ben F. Feingold of Kaiser Foundation Hospital discovered that processed food additives may be a major unsuspected cause of such serious problems in children as hyperactivity and a host of learning problems. This seems to correspond with the fact that it is not unusual to find that delinquent children who appear in court also have reading problems.

Drs. C.L. Scudder and A.G. Karzmar et al., research scientists at Loyola University's Institute of Mind, Drugs and Behavior, have recently reported that butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT) can cause significant brain and behavioral changes. As a result of their findings, they conclude that these two additives in human food products can no longer be viewed as innocuous substances and should be reevaluated. These two preservative chemicals have been used, in both human and animal foods, for over twenty years to replace the natural vitamin E (antioxidant) lost in processing. They are on the FDA's generally regarded as safe, (GRAS) list. However, this research team found that if pregnant mice are fed diets containing large quantities of BHA and BHT their offspring often suffer major changes in brain chemistry and show abnormal behavioral patterns. As a result of recent tests in Britain, BHT has been banned and the use of BHA restricted.

Are We Well Fed?

Our so-called average diet has failed in that many Americans, suffering from malnutrition, find that their diet is lacking one or more of the minerals and vitamins so important in whole nutrition. Contrary to the generally accepted opinion, vitamins do not function individually. Their functioning is closely related to other vitamins and nutrients, particularly minerals and certain proteins to form or activate enzyme systems. Proper metabolism is the result of the functioning of thousands of vital enzyme systems.

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Inadequate nutrition, frequently the cause of poor health, often appears to be induced by insufficient trace elements. In fact, malnutrition often affects the functioning of every organ and tissue in the body through the lack of such trace elements. Trace elements have been defined as "vitamins and minerals which are necessary for the adequate nutrition of plants and animals." The quantity needed may be only a trace, or as small as one part per million.

The degenerative type of disease that now affects so many of our older people is believed to stem from long-term dietary deficiencies. In many the condition often reverts to their childhood. This is very probable, as teenagers from every type of family have been found to be undernourished.

Starved Adolescents

This caption headlined the report of a ten-year study of over 2,500 boys and girls between the ages of 13 and 20. This survey revealed the following:

1. Only about 25 percent of the girls and boys were eating sufficient energy-making foods to keep the body machinery running efficiently.
2. Nearly half the girls and not quite half the boys lacked the proper amount of protein foods necessary to build and repair body tissues.
3. Both the boys and girls were short of the calcium and phosphorus so necessary to build strong bones and teeth. Many also had a shortage of iron and were found to be anemic.
4. Forty-nine percent of the boys and 48 percent of the girls suffered from "nutritional nerves," twitching of the face, nail biting, and restlessness.
5. The vitamin shortage in both boys and girls included vitamins A, B, and C.
6. Of the 2,536 examined only seven girls and twelve boys had perfect teeth. Dental caries is certainly evidence of dietary deficiencies.
7. Eighteen percent of the girls and 19 percent of the boys were underweight.
8. Eye trouble, caused by poor diet, particularly a lack of vitamin A, was evident in more than three-quarters of the adolescents examined.
9. Poor complexions were the rule, especially acne and rough skin, with the girls making a worse showing than the boys.

These boys and girls have now, no doubt, become the mothers and fathers of another generation, with more bad food habits, subjected to more food additive chemicals and drugs and apparently with less stamina than their parents. Therefore, it is not too surprising that the Armed Forces have rejected as high as 45 percent of young men as physically or mentally unfit. Neither is it too surprising to find that in a survey of women between fifteen and fifty years of age, two out of three were found to be suffering from some degree of nutritional anemia.

It is surprising to learn that, when the results of the physical examination of 10,000 businessmen averaging forty-five years of age and presumably well fed were recorded, only one in ten appeared to be in normal health. Apparently, each generation inherits a predisposition to and becomes more exposed to degenerative diseases than its predecessor.

A lifetime of nutritional errors surely must be contributing to our declining health statistical records. Doting grandparents and parents allow children to gorge themselves with sweets such as nineteen pounds of candy per year, gooey bakery products, chemicalized ice cream, dyed snow cones, and unlabeled cola drinks containing half as much caffeine as a cup of coffee in addition to the sugar, acid, and carbonation that ordinary soda pop contains. All are vitamin antagonistic as well as cariogenic.

This is an angle seldom considered by pseudo nutritionists who are only diet conscious. They presume that food that supplies three or four vitamins, two or three minerals, and some protein is all that is necessary for body maintenance. Generally, this is not true, as assimilation is more complicated. The various vitamin activities are closely related to mineral activity and with the essential amino acids form the complex enzyme systems. Anything that inhibits a vitamin or mineral combination from uniting with the necessary amino acids to form or activate functional enzymes is antagonistic toward proper metabolism and could foster or exacerbate some degenerative disease.

Antagonism

Over the years several of the chemical food additives generally regarded as safe (GRAS) were found to be vitamin antagonistic or cause their destruction. Also, some food chemicals are known to interfere with one or more

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Why Phyllis Quinn's Slow Cook enzyme components, thereby inhibiting activity of the concerned enzyme system. Some chemicals may aid in the development of opposing enzymes or even substitute for vitamins or their essential enzyme systems. Sometimes drugs or poisons may cause excessive elimination of vitamins, thereby further complicating the formation of necessary enzymes.

The loss of vitamins or minerals and the destruction of protein or inhibition of its digestion, in any way, is a deterrent to good health. In protein digestion the complete essential amino acid pattern must be present. A combination raw fruit and vegetable salad, including legumes, at the beginning of the meal is a good source of various proteins.

Chemical analysis of the endocrine parenchyma reveals a high degree of mineral and vitamin content, with certain glands specializing in the storage of a specific mineral. The storage of iodine in the thyroid is well known, but the storage of zinc in the prostate gland is less known. In recent tests Miller et al., Canadian scientists, found the efficiency of the utilization of food is severely depressed by zinc deficiency.

Seafoods are a good source of zinc and also of iodine for thyroid innervation. Land sources of zinc are green leafy vegetables, whole grain, or wheat germ, provided the producing soil is not devoid of zinc. As stated on previous occasions, endocrine failure in general is felt by many to be due to the use of refined foods. For as McCarrison stated: "Incomplete foods upset mineral regulation of the endocrine system through crippling, of one or more glands, by mineral deficiency and as a possible result encouraging disease and advancing senility."

Proper metabolism needs amino acids, minerals, and vitamins for enzyme formation and the correct utilization of food for growth and/or maintenance. A deficiency in supply or an unbalance by antagonism may cause a serious endocrine unbalance. Investigators find these important body constituents must be constantly supplied and *efficiently used* to insure good health. Even though supplied, inefficient use leads to poor metabolism and possible degenerative conditions.

Inefficient Individual Use by Interference

Some common usually unconsidered antagonists and their possible effects follow:

Mineral oil, so often advised for constipation, especially in the aged, not only coats the intestines, thereby keeping the villi from performing their food absorptive duties and promoting malnutrition, but also picks up the fat-soluble vitamins A, D, E, and K and conducts them out of the body, thereby depleting the system of these important nutrients. The vitamin A complex so important for eye and kidney function is also affected by the bleaches used in processing flour and other foods. Kidney conditions or blindness have resulted from such loss. Vitamin D is important in the regulation of calcium and phosphorus in forming teeth and bone and in preventing osteoporosis. Vitamin E is reported to be important in muscular atrophy. Vitamin K, so necessary in blood clotting problems, is also lost.

An effect of constipation is that too often the protein decomposition products interfere with pantothenic acid absorption.

Alcoholic drinks act as antagonists to the vitamin B complex. Besides being involved in deafness and nervous system complaints including beriberi, a chronic heart condition is usually found as a result of a diet low in protein, minerals, and vitamins.

Nicotine is one of the greatest vitamin C complex antagonists. Therefore, smokers must have foods rich in C or take supplements. Now the innocent bystander also becomes involved. According to research scientists at the School or Medicine, University of Western Australia, cigarette smoke reduces protection against infections.

Antibiotics such as penicillin upset the intestinal bacteria balance by destroying friend and foe alike; however, the more virile *Escherichia coli* take over completely, before the friendly lactobacilli can be replaced. This unbalanced condition interferes with the production of vitamin B12, its absorption as well as the absorption of the entire vitamin B complex and the production and absorption of vitamin K. Also, this unbalanced condition together with ingestion of sugars is particularly antagonistic to vitamin B1.

It is necessary to reestablish this balance as soon as possible to provide favorable function in the intestinal tract. *Erfahrungsheilkunde*, a German medical publication, claims that viable lactobacilli of both the acidophilus and bifidus (in breastfed infants) types, besides keeping down the pathogenic bacteria, stimulate peristalsis to nourish the cells, to establish symbiosis, to create a soft smooth stool, to synthesize enzymes to synthesize vitamins, and to detoxify the body.

Some drugs, such as the sulfa compounds and antimalarials, affect vitamin B2 (riboflavin) action. Some others are known to hinder the action of vitamin A, B3 (niacin), B6 (pyridoxine), folic acid, and the vitamin C complex.

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In *A New Breed of Doctor*, author Alan H. Nittler, MD, advises that the vitamin C complex in addition to ascorbic acid contains chalcone, quercetin, rutin, and pigments of citrinoids, hesperidin, carotenoids, and bioflavonoids.

"Minimum Requirement" Obsolete

With all the nutritional variables it is impossible to determine a uniform minimum daily requirement. It is because of individual variations in body structure, diets, habits, and antagonists that further supplementation has sometimes become necessary.

Dr. A. Hoffer, whom we quoted earlier, says: "The body can deal with an excess of vitamins and minerals more effectively than it can deal with a deficiency."

Richard P. Huemer, MD, Molecular Disease Institute, Woodland Hills, California, says: "A central fact of biology—human and otherwise—is that individuals can vary considerably from one another in their needs for nutrients."

Dr. W.A. Krehl, University of Iowa nutritionist, states:

> "Optimal nutrition has been visualized as that which maintains a level of metabolic normalcy, so that when the organism is exposed to stress, the normal homeostatic mechanisms can be put into operation rapidly, with a minimum of strain and for as short a time as possible…This may vary considerably, depending upon individual biologic variability, sex, age, and both exogenous and endogenous stress."

Roger Williams, PhD, Clayton Foundation, University of Texas, notes: "The use of such supplements need not rest on knowing that we are deficient. The fact of individuality suggest strongly that deficiency is widespread and that nutritional insurance makes sense."

Enzyme Modification

Besides the additive food chemicals, alcohol, nicotine, drugs, insecticide sprays, polluted water (due to the leaching of commercial fertilizer salts such as the nitrates), added fluorides, and other enzyme inhibitors, we find some foods are also antagonistic. As an example, we cite the fact that people living mostly on a corn diet develop pellagra. The reason is that corn contains an antagonistic compound called acetylpyridine, which inactivates niacinamide, a B complex vitamin. This fact was originally discovered years ago in Italy. It later led to the determination that this was the cause of pellagra in some of the less affluent areas of our southern states where corn was found to be the main constituent of the diet. Apparently, an unbalance of the B complex vitamins was further aggravated by this antagonistic compound in corn.

Biologists Monty and McElroy of Johns-Hopkins University believe this to be a zinc problem, as the action of the zinc seems to be dissipated by the acetylpyridine. From their experiments they believe that zinc holds the molecules diphosphopyridine, nucleotide, and triphosphopyridine nucleotide (derivatives of vitamin B3) in proper orientation for reactions involving the transfer of hydrogen atoms and electrons between these nucleotides and a number of other organic molecules. The zinc is thought to be attached to the surface of the enzyme and the nucleotide attached in turn to the zinc. In this case the zinc has apparently lost its modifying action on the surface of the enzyme. (Excerpted in part from "The Trace Elements in Food," *The Yearbook of Agriculture 1959*, page 125.)

Some twenty-five years ago in Canada researchers Dr. A. Hoffer and Dr. Humphrey Osmond found that pellagra in an advanced stage could be identified with schizophrenia. Other researchers, however, advise that slightly less than 3 percent of the current population is likely to reach this advanced state. Vitamin B3 (niacin) is reported to be the most important of the B complex vitamins in both these conditions, with schizophrenia requiring a greater amount. According to Dr. Hoffer, "If all the vitamin B3 were removed from our food, everyone would become psychotic within one year."

He also found that in mild niacin deficiency a person may feel tense, irritable, nervous, and may suffer from insomnia, skin ailments (including sensitivity to the sun), or the skin may darken and become scaly. Digestion may also be impaired because B3 is involved in secretion of digestive juices and in the sugar transport system. When pellagra advances toward a state of schizophrenia, the sufferer tends more toward violence, disorientation, and delusions. He may be suffering from a chronic deficiency of vitamins B3 and the C complex.

Nutritionists believe that many so-called mental cases presently isolated in institutions have probably ended up there as a result of poor assimilation and loss of the good elements of the food not being used by the body, possibly due to endocrine unbalance through antagonism. A high degree of mineral and vitamin content has been noted when the endocrine glands have been analyzed. This storage together with normal physiology of all the organs of the body and whole food assimilation tends toward the maintenance of a unified healthy whole body with little if any cellular malnutrition. Therefore, health requires that any antagonism must be corrected. Lack of soil health and food processing also tend to cause an unbalanced metabolism through loss of minerals, protein, and vitamins, with consequent loss of individual enzymes or entire enzyme systems.

Awareness

We cannot close our eyes to the fact that neither health or disease are accidental. There must be a cause for every effect. Ignorance of the rules of health neither suspends or annuls this effect. Apparently, the increased use of chemical contaminants and their interference in metabolism is aiding in the further downward trend in our national health.

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Selene River Press is a publishing company specializing in holistic nutrition education. Our philosophy is rooted in the work of Dr. Royal Lee, who showed that vitamin deficiencies, due to processed foods, are responsible for most degenerative disease. From organic farming to food-based vitamins, from raw milk to fermented foods, Dr. Lee set the course for the field of whole food nutrition.

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